Maternal and Child Health

Health Objectives for the Year 2010: Improve maternal health and pregnancy outcomes and reduce rates of disability in infants, thereby improving the health and well-being of women, infants, children, and families in Lancaster County.

Health Implications

As the twentieth century ends, technology, economic resources, and education levels are primary factors that must be addressed to achieve desired outcomes for maternal, infant, and child health. Technological and health-research breakthroughs have brought about improvements in preconception, prenatal, and postnatal care. However, the problem of health disparities remains the primary issue for improvement of maternal and infant health. These maternal/child health disparities are pronounced between white and nonwhite women, with the poorest outcomes seen among the youngest mothers.[1]

Despite the best efforts of health care providers, complications of pregnancy do arise and may lead to fetal or neonatal death. The leading causes of infant death include birth defects, Sudden Infant Death Syndrome (SIDS), prematurity, and low birth weight. Although the exact cause of SIDS is unknown, a significant decrease in the number of SIDS deaths has occurred nationally since the implementation of the "Back to Sleep" campaign, which encourages caretakers to place infants only on their back or side to sleep. Although the campaign has proven successful, some minority cultures are having difficulty adjusting to the new method based on heritage and history.[1]

Prematurity and low birth weight continue to be leading causes of infant death and disability. Infants born with lower than normal birth weight are more likely to experience neonatal death, developmental and neurological disabilities, and other complications. Compared with infants of normal birth weight, low birth weight (LBW) babies are five to ten times more likely to die during the first year of life. A disproportionate number of infants born to minority parents are born prematurely and/or of low birth weight. Through inroads made in medical technology and treatment, significant numbers of preterm infants are living today that would have died ten years ago. For many infants now surviving complicated and often fragile neonatal periods, the lifelong implications of being born too early result in disability, which in turn has an impact on the emotional and financial status of the family as well as the community's ability to meet the growing needs for these children and their families. Continued follow-up and

Table 1. Maternal and Child Health Indicators

	Lancaster Recent	Lancaster Objective 2010	Nebraska Recent	Nebraska Objective 2010	National Recent	National Objective 2010[1]
Percent of mothers receiving prenatal care beginning in the first trimester	83.8[2]	90.0	83.6[3]	--	82.8[4]	90.0
Percent of mothers using alcohol during pregnancy	1.2[2]	1.0	1.2[3]	--	1.2[5]	--
Percent of pregnant women who did not abstain from alcohol during the past month	--[6]	--	--	--	21.3[7]	5.0
Percent of mothers using tobacco during pregnancy	15.8[2]	2.0	16.3[3]	--	13.2[5]	2.0
Percent of pregnant women who did not abstain from tobacco use during the past month	--[6]	--	--	--	21.5[7]	5.0
Percent of babies born premature (younger than 37 weeks gestation)	8.3[2]	7.0	8.4[3]	--	11.4[5]	7.6
Percent of babies born with low birth weight (less than 5 lbs., 9 oz. or 2500 grams)	6.8[2]	5.0	6.5[3]	--	7.6[4]	5.0
Percent of babies born with very low birth weight (less than 3 lbs. 5 oz. or 1500 grams)	1.3[2]	1.0	1.3[3]	--	1.5[4]	1.0
Infant mortality rate (infant deaths per 1000 live births)	8.0[2]	5.0	7.3[3]	--	7.2[4]	5.0
Percent of mothers who initiate breastfeeding in hospital	--[8]	80.0	68.1[9]	--	--	--
Percent of mothers breastfeeding, early postpartum period	--[6]	--[6]	--	--	60.0[10]	75.0
Percent of mothers breastfeeding at 6 months postpartum	--[8]	50.0	--	--	22.0[10]	50.0

study of the outcomes of preterm, low birth weight infants' growth and development are necessary.

Prenatal care is an essential component of a positive birth outcome. Prenatal care ensures proper education and early detection of risks, which may impact the pregnancy and birth outcome. Health providers are better able to decrease infant mortality, low birth weight, very low birth weight, and neural tube defects as well as other complications by monitoring women with high-risk pregnancies. Pregnant women are more apt to have better pregnancy outcomes if risks can be detected early. Consistent with national trends, Lancaster County reports minority women generally enter prenatal care later than white women.[2]

Preconception counseling regarding maternal health conditions such as diabetes, phenylketonuria, Rh-negative blood type, epilepsy, and chronic hypertension as well as environmental health risks is essential for the birth of a healthy baby. Preconception counseling on proper nutrition (including the folic acid intake), and the effects of tobacco, alcohol, and drug use as well as the promotion of early entry into prenatal care has the potential to significantly improve pregnancy outcomes. For example, adequate intake of folic acid prior to or beginning early in pregnancy could decrease the incidence of spina bifida and other neural tube defects by 50%.[1] Currently there is no data to identify the number of physicians in Lincoln–Lancaster County who routinely discuss pre-pregnancy issues with their patients.

As many as 20% to 30% of the low birth weight infants born in the United States can be attributed to tobacco, alcohol, and illicit drug use.[1] Tobacco use during pregnancy has been linked to low birth weight and very low birth weight infants as well as fetal deaths and a high prevalence of miscarriage. The effects of alcohol use on the developing fetus include Fetal Alcohol Syndrome, Fetal Alcohol Effects, cerebral palsy, and other birth defects. Illicit drug use has been correlated with low birth weight and very low birth weight infants, neurological and developmental impairments, decreased fetal growth, and preterm birth, among other problems. Women using illicit drugs are more likely to contract contagious diseases, such as HIV and Hepatitis B, which put the infant at greater risk. Use of common illicit drugs, such as cocaine or marijuana, during pregnancy is associated with premature birth, impaired fetal growth, and neonatal seizures.[1]

The negative effects of alcohol, tobacco, and drugs as well as prescription medications should be discussed with women of childbearing age prior to and during pregnancy in order to reduce the number of infants with certain birth defects and with low birth weights. With respect to alcohol use, national campaigns continue to assist in public awareness, and physicians are increasingly focusing on abstinence from alcohol during pregnancy.

Preterm births are often an outcome for women of less than ideal weight during their pregnancy. Women within a normal weight range are expected to gain 25–35 pounds; women who are overweight are expected to gain 15–25 pounds; and women who are underweight are expected to gain 28–40 pounds. Women having multiple births are expected to gain the average weight of an infant in addition to the expected weight gain for their weight range.[1]

Prenatal care also affords the health care worker an opportunity to discuss the benefits of breastfeeding. Breastfeeding is the optimal form of nutrition for infants and can have positive effects for both mother and child. Breastfed infants tend to have higher IQs than infants fed breast milk substitutes. Infants who are breastfed for at least six months have three times fewer ear infections, five times fewer urinary tract

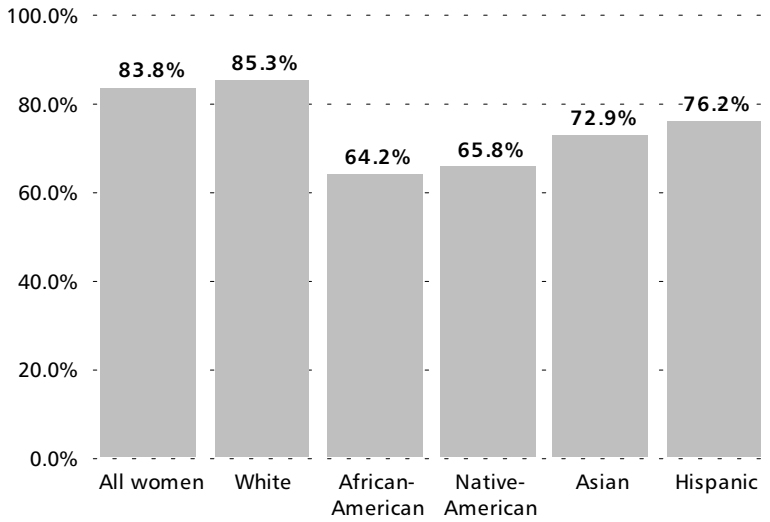

Figure 1: Percent entering prenatal care during the first trimester in Lancaster County, 1998.[1]

infections, five times fewer serious illnesses, and seven times fewer allergies. Breast milk is much more easily digested than formula and results in decreased spitting up, constipation, and diarrhea.[3]

The number of multiple-birth pregnancies has increased dramatically in the past ten years.[4] The greater the number of fetuses carried, the greater the risk for preterm and low birth weight babies. Efforts to enhance pregnancy outcomes for multiple-birth pregnancies has been aided by maternal steroid use prenatally and the use of surfactant after delivery. Nevertheless, continued efforts are needed to enhance the pregnancy outcomes of multiple-birth pregnancies.

Current Status and Trends

Prenatal Care

In Lancaster County in 1998, 83.8% of all pregnant women began prenatal care in the first trimester, a rate similar to national and state rates.[5,6] Following both national and state trends, early entry into prenatal care was much lower for minority women. In particular, 65.8% of Native-American women and 64.2% of African-American women received prenatal care in the first trimester (see fig. 1). Teen mothers also enter prenatal care later than older mothers. The recent decline in entry into prenatal care in Lancaster County is reportedly being attributed to the difficulty in obtaining appointments until the second trimester.[7] Data will need to be gathered to determine if the length of time required to access prenatal care is a legitimate factor for this decline.

Entry into prenatal care means entry into traditional western medicine. Some women may consider themselves "entering into prenatal care" by consulting a maternal leader, cultural "healer," or using cultural medical practices in relation to their pregnancy. This may account for some of the disparity between nonminority and minority women with reference to entry into traditional western medicine's prenatal care. Other disparities may also be related the growing number of non-English-speaking citizens in Lincoln and Lancaster County. Issues related to cultural needs and language translation cause continued access problems for some of these populations. See the Access to Health Care and Health Disparities sections for further discussion.

Alcohol, Tobacco, and Drug Use During Pregnancy

There are two important sources of data on alcohol, tobacco, and drug use during pregnancy. One is the birth certificate, for which tobacco or alcohol use is typically self-reported by the mother. These statistics are considered underreported, particularly for alcohol and drug use.

1998 births data at the local, state, and national levels all indicated a rate of

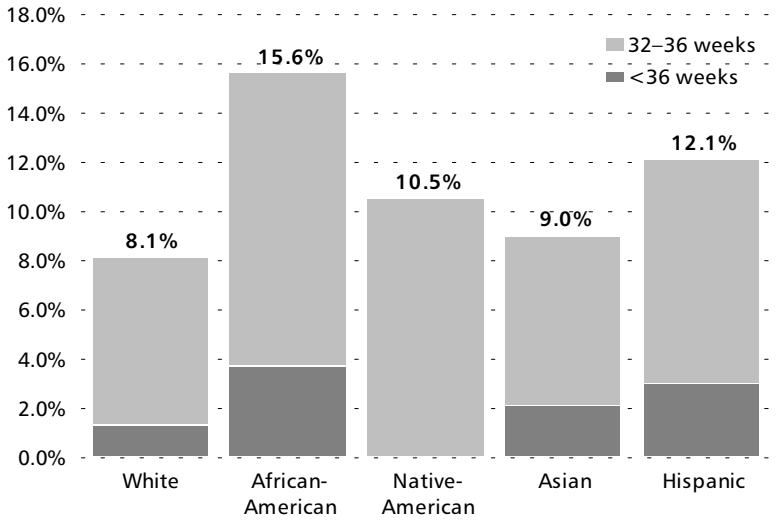

Figure 2: Percent of births that are preterm by race/ethnicity in Lancaster County, 1998.[2]

1.2% of mothers reporting alcohol consumption during pregnancy (see indicators). Household surveys, the second source, are considered a better means of reporting alcohol use during pregnancy. This is accomplished at the national level by the National Household Survey on Drug Abuse (NHSDA). The relevant NHSDA indicator is alcohol use during the past month of pregnancy, and it stood at 21.3% in 1994–95. The national objective is to reduce this number to 5% (see indicators). There is no comparable local or state measure to the NHSDA. Accurate local rates of alcohol use during pregnancy could be obtained using a periodic household health survey.

In 1998 in Lancaster County, 15.8% of pregnant women reported smoking during their pregnancy, compared to 16.3% statewide and 13.2% nationally, again according to births data. National NHSDA data indicate a much higher rate of 21.5% of pregnant women not abstaining from smoking during the past month. The federal goal is to reduce that number to 5% by the year 2010 (see indicators).

Along with alcohol use and smoking figures, statistics on drug use during pregnancy are largely based on maternal self-reporting and are therefore likely to be under reported. Fear of legal consequences and concerns regarding child custody may prevent a woman from admitting drug use. Community awareness campaigns are needed to continue to promote abstinence from drug use, especially during pregnancy.

Prematurity

Prematurity affects 11.4% of births in the United States, 8.4% in Nebraska, and 8.3% in Lancaster County (1998). Lancaster County rates for preterm births for 1998 for were 1.3% for less than 32 weeks gestation and 7.5% for 32–36 weeks gestation. A disproportionately large number of infants born to minority mothers are born prematurely. Nationally and locally, African-American, Hispanic, and Native-American women have especially high preterm birth rates (see fig. 2).[1]

Low Birth Weight

Nationally, 7.6% of infants are LBW, defined as weighing less than 2500 grams. The rate of very low birth weight (VLBW), which is less than 1500 grams, is 1.5%. The LBW rate has risen nationally in recent years.[1] In Nebraska, LBW rates have remained fairly stable; in 1998 6.5% of births were of LBW (see indicators). Although the state LBW rate is relatively stable, these births accounted for more than half (59%) of all infant deaths. The mortality rate of LBW infants is nearly 20 times higher than the rate for normal and high birth weight infants in the state.[7]

Like the nation, Lancaster County is experiencing an increasing low birth weight trend. In 1987, 5.4% of births were LBW compared to 6.8% in 1998. In 1987, 0.6% of births were VLBW, compared to 1.3% in 1998.[2] Based on data gathered from 1989 through 1996, there is a significant difference between the percent of LBW infants born to white (5.5%) and nonwhite women (8.8%).[7,2] African-American women continue to have the highest percentage of LBW infants and VLBW infants, with

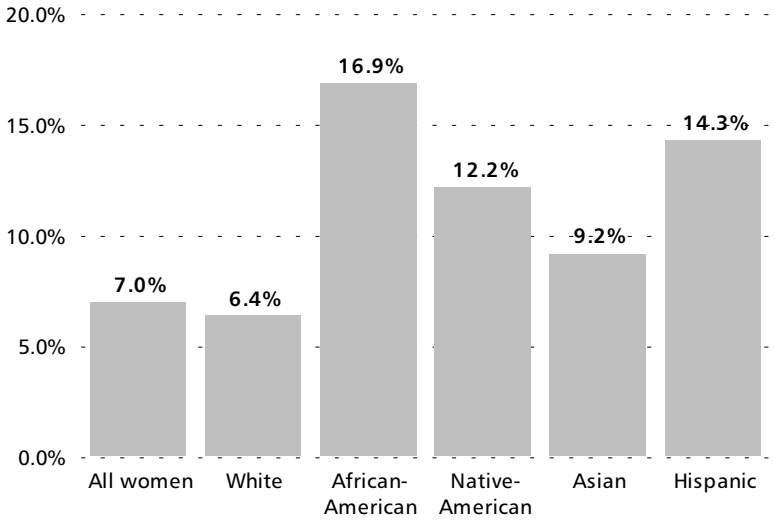

Figure 3: Infant mortality rate (infant deaths per 1,000 live births) in Lancaster County, 1994–1998.[3]

rates of 11.9% LBW and 5.5% VLBW in 1998 in Lancaster County. Low birth weight rates are also high for Native-American (7.9%) and Asian babies (9.7%) in Lancaster County.

Infant Mortality

Nationally the infant mortality rate was at a record low of 7.2 per 1,000 live births in 1998. However, the rate for African Americans remains more than twice that of White infants (14.1 per 1,000 vs. 6.0 per 1,000 in 1998).[5] In 1995, the Native-American infant mortality rate was 9.0 per 1,000, while the rates for Asian and Hispanic infant mortality were comparable to or better than those for Whites (5.3 per 1,000 and 6.3 per 1,000 respectively).[1]

In Nebraska, the infant mortality rate for 1998 was 7.3 per 1,000. The Lancaster County rate for the same year was 8.0 per 1,000. Lancaster County has set an infant mortality goal of 5.0, the same as the national goal. During the most recent five years of births data (1994–1998), the contrast between infant mortality rates for infants born to White mothers and those born to African-American, Hispanic, and Native-American mothers was particularly dramatic (see fig. 3). The trend for poorer outcomes of low birth weight, prematurity, and infant mortality continues for infants born to African-American women in Lancaster County.

Breastfeeding

Nationally, the overall rate for women beginning breastfeeding in the hospital is 60% (1996). Data provided in 1999 by Lincoln hospitals report that anywhere from 67.5% to 81.2% of mothers, depending on the hospital, are initiating breastfeeding while at the hospital. The rate for breastfeeding declines substantially between delivery and five to six months post-partum, with just 22% of mothers reporting breastfeeding at six months. Comparison data for Nebraska or Lancaster County is not available (see indicators).

National statistics show that 64% of White, 61% of Hispanic, 52% of Native-American, and 37% of African-American mothers initiate breastfeeding. The 1996 rate at five to six months for White women was 26%, among Hispanic women 21.1%, and 12.1% among African-American women. Women in poverty initiated breastfeeding less frequently than higher income women, with women at 150% of poverty initiating breastfeeding at a rate of only 7.2%.[1]

Maternal education levels also play a key role in likelihood of breastfeeding. Of mothers with a college education, 74% initiated breastfeeding, and 48% of those with a high school diploma did so. Less than 25% of women in all economic and ethnic categories continue to breastfeed at six months, with the exception of 31% of college-educated women.[1]

Health Disparities

Throughout areas of health disparity for pregnant women and infants, African-American women continue to have the poorest prenatal and pregnancy outcomes in Lancaster County. Several areas of disparity have been quantified in the narrative above and include later entry into prenatal care, higher rates of preterm delivery, higher rates of low birth weight and very low birth weight infants, and infant mortality. Native-American women have later entry into prenatal care; however, their pregnancy outcomes tend not to be as poor as those of African-American women. Asian women, despite language and cultural barriers, have better outcomes than other minorities; however, Asian births will need further study, as more Asian women are moving into Lancaster County.

Teen mothers also experience health disparities with respect to late entry into prenatal care and a higher incidence of premature deliveries and corresponding low birth weights. Societal pressures continue to have an impact on teen entry into prenatal care and appropriate nutrition and weight gain.

Public Health Infrastructure

Two key measurement goals are targeted for public health infrastructure development in the Maternal/Child Health area. These goals entail closer study and measurement of causes and outcomes for premature and low birth weight infant, and thereby will produce information that will help target efforts to reduce pregnancy complications resulting in premature and low birth weight births.

In the first infrastructure/measurement goal, beginning in the 2000 school year, a data match will be made between Vital Statistics and Early Childhood Special Education programs in the county. The data match is proposed to identify those children born with low or very low birth weight receiving special education services. In addition, data compiled by the Nebraska Health Systems Neonatal Intensive Care Unit (NICU) Follow-up Project will be shared with LLCHD to further study the developmental outcomes of Lancaster County infants completing a stay in any Nebraska NICU. The goal of this 2010 infrastructure development project is to measure the longitudinal outcomes of low-birth-weight infants who in previous years would have died, study the impact of these births on the county and its education and health care systems, and identify opportunities for improvement.

The second infrastructure/measurement goal is to track, beginning in 2000, preterm deliveries due to (a) pregnancy complications or (b) preterm labor unable to be stopped. Data will be gathered and reviewed for causes of preterm deliveries that may be susceptible to targeted community efforts to reduce the number of preterm births. An example of such targeted community efforts could be continued efforts to reduce vaginal infections, which are increasingly correlated epidemiologically with preterm births. Another example could be targeted efforts to reduce smoking and alcohol use among pregnant women, if this can be shown to have an impact on prematurity of infants born in Lancaster County.

Recommendations

- Create systems (as discussed in the Public Health Infrastructure section) to collect and analyze data elucidating causes and outcomes for premature and low birth weight infants to help target efforts to reduce pregnancy complications that result in prematurity and low birth weight. For this purpose, create data linkages between Vital Statistics, Early Intervention records, and NICU, and other data sources, as necessary.
- Increase awareness among medical practitioners and the public regarding culturally appropriate preconception counseling for all women. Materials may include curricula from the March of Dimes or other sources. Through this effort, continue to support the A-1 and March of Dimes efforts regarding adequate intake of folic acid.
- Promote and increase maternal access to prenatal care delivered by a variety of practitioners including physicians, certified nurse midwives, and nurse practitioners. Continue to promote culturally matched support persons for women during pregnancy, delivery, and post-partum. Continue to build upon successful outreach/case management models, such as Healthy Homes (with the addition of outreach workers for the Arabic speaking and Bosnian families) and the High Risk Infant programs.
- Continue to support the national efforts of the "Back to Sleep" campaign to continue to reduce the incidence of SIDS.
- Continue tracking by hospitals of the C-section rate and decrease C-sections.
- Achieve tracking by hospitals of readmissions by birth age in order to identify neonatal hospitalization rates and guide continued teaching/intervention.
- Survey physician's offices regarding women's entry into prenatal care how early in pregnancy are women able to get care.
- Add questions on women's health histories regarding use of over-the-counter and herbal remedies to appropriately address their health risks as related to pregnancies.
- Track multiple-birth pregnancy incidence rates and outcomes as part of the activity discussed in the Public Health Infrastructure section.
- Track very very low birth weight infants (VVLBW), those born weighing less than 750 grams.
- Target male partners in preconception, prenatal, breastfeeding, and parenting education.
- Promote access by all families to parenting education and support, including multimedia access to parenting information (phone service, Web site, etc.).
- Promote and increase hearing screening for infants to detect congenital hearing loss and make referrals for early intervention services.
- Achieve cooperation among hospitals, physician's offices, and the Breastfeeding Coalition to work together to establish consistent initial and follow-up (six and 12 months) collection of breastfeeding data for Lancaster County.
- Develop consumer-friendly resources in the community to help women resolve breastfeeding challenges and increase duration of breastfeeding.
- Promote the Family Violence Council's role in collaborating with community agencies in keeping data and providing health/medical providers with ongoing education and information on identifying and treating women who are battered (with a focus on women battered during pregnancy).

- Promote and increase frequent screening and treatment of vaginal infections to reduce preterm delivery.
- Reenact a Maternal and Child Health Committee for Lancaster County, operating under the Board of Health, to implement recommendations and other task-specific activities (not a "networking" group).

Notes

Related discussion or indicators are located in the chapters on *Healthy Children*, *Oral Health*, *Toxic and Hazardous Materials*, *Tobacco Use*, *Nutrition and Physical Activity*, and *Alcohol and Other Drugs*.

Table 1

-- Currently no data source.
1. U.S. Department of Health and Human Services, *Healthy People 2010 Objectives: Draft for Public Comment*.
2. Lincoln–Lancaster County Health Department, Lancaster County Vital Statistics, 1998.
3. Nebraska Health and Human Services System, *1998 Nebraska Vital Statistics Report*.
4. National Center for Health Statistics. *National Vital Statistics Reports*, vol. 47, no. 25, 1998. U.S. births data (preliminary).
5. National Center for Health Statistics, *National Vital Statistics Reports*, vol. 47, no. 18, 1997. U.S. births data.
6. Not chosen for local HP2010. The national indicator and data are shown for comparison to the local indicator and data on the previous line of the table.
7. U.S. Department of Health and Human Services, *Healthy People 2010 Objectives: Draft for Public Comment*, 1994–95. Data from National Household Survey on Drug Abuse.
8. Currently no data source. Data is likely obtainable from local hospitals although a common measurement approach needs to be established.
9. Nebraska Department of Health and Human Services, Title V/Maternal and Child Health Federal Block Grant Application (draft), FY2000, July 15, 1999.
10. U.S. Department of Health and Human Services, *Healthy People 2010 Objectives: Draft for Public Comment*, 1996. Data from Ross Mothers Survey (Abbott Laboratories).

Figures 1–3

1. Lancaster County Vital Statistics, 1998. Nebraska Vital Statistics, 1998. U.S. Department of Health and Human Services, *Healthy People 2010 Objectives: Draft for Public Comment*, 1995 statistics.
2. *ibid*.
3. *ibid*.

Narrative sources

1. U.S. Department of Health and Human Services. "Maternal, Infant, and Child Health," *Healthy People 2010 Objectives: Draft for Public Comment*, 1999.
2. Lincoln–Lancaster County Health Department. "Community Health Status in Lincoln and Lancaster County," *Maternal and Infant Health*. March 1998.
3. Elza, D.D. "The Learning Curve." 4614 Prospect Ave. #421, Cleveland, OH 44103.
4. CDC National Center for Health. Multiple Births Web Press Release. September 14, 1999. "Trends in Twin and Triplet Births: 1980–97." vol. 47, no. 24. 20. pp. (PHS) 99–1120.
5. CDC National Center for Health Statistics Report, Monthly *National Vital Statistics Report*, vol. 47, no. 25.
6. *1998 Nebraska Vital Statistics Report*, Nebraska Health and Human Services System
7. 2010 Maternal and Infant Health Workgroup Anecdotal Report